MEMORANDUM

Date: October 11, 2019

To: Eric Bergman, NJDEP
Steve Maybury, NJDEP
Andy Park, USEPA

From: Tom Buggey, LSRP, Roux Associates, Inc.

CC: Mitch Gertz, Solvay
Erin Palko, Integral Consulting

Subject: Solvay Specialty Polymers USA
SRP PI No. 015010
Activity Number RPC140002 – Solvay PFCs

On behalf of Solvay Specialty Polymers USA, LLC (Solvay), this Technical Memorandum (Tech Memo) presents a summary of remedial investigation (RI) of Groundwater Offsite activities completed in 2018 to the south-southeast of Solvay's facility located in West Deptford, New Jersey (Plant). The scope of the Groundwater Offsite activities discussed herein were presented in the May 17, 2018 Technical Memorandum (the Technical Memorandum) submitted to the New Jersey Department of Environmental Protection (NJDEP). In a letter to Solvay dated June 29, 2018 the NJDEP provided comments to the proposed scope in the Technical Memorandum and Solvay subsequently responded to the NJDEP in a letter dated August 27, 2018.

Groundwater Offsite. Solvay installed the following eight shallow and deep monitoring well pairs between August and November 2018: MW-109D/S, MW-110D/S, MW-111D/S, MW-112D/S, MW-113D/S, MW-114D/S, MW-120D/S, and MW-121D/S. The wells are screened in the Upper Potomac Raritan Magothy (UPRM) formation at the locations indicated in Figure 1. These locations were selected to provide a wider monitoring well network for determining the presence and distribution of per and polyfluoroalkyl substances (PFAS) to the south and southeast of the Plant. Authorizations for access from landowners were received prior to the monitoring well installation.

Cascade Drilling of Jackson, New Jersey provided drilling and well construction services for the monitoring well installations. Boring logs, which included soil recovery, lithology, and color, were recorded at each new well installation consistent with NJAC 7:26E-4.4(g)4. The monitoring wells were constructed using 2-inch diameter PVC riser and screen with a 10 ft. screen interval. The well completion (flush mount or stick-up protective casing) was based on the requirements of the landowner. Following installation, the wells were developed using a submersible pump to remove fine-grained materials that may have settled in or around the monitoring wells during installation and to ensure the wells were hydraulically connected to the formation. Development was considered complete when the level of visual turbidity had disappeared. Monitoring wells were surveyed by a New Jersey licensed land surveyor to standard horizontal and vertical datum. All appropriate documentation will be submitted to the NJDEP in a final RI Report.

Vertical profiling of the deep well pilot borehole was conducted. At each location a minimum of three groundwater samples were collected within the UPRM for vertical profile assessment during installation of the deep well pilot borehole at each well location as follows:

- 1 sample from approximately 20 ft below the Merchantville Formation;
- 1 sample from the approximate mid-point of the UPRM aquifer unit; and

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- 1 sample from the base of the UPRM (above the clay confining unit).

Due to the variable thickness of the UPRM, at some locations, more than three samples were collected. The additional samples were collected to provide a more detailed vertical profile. The samples were analyzed by SGS for PFAS by USEPA 537M methods, which includes 12 reportable compounds, for screening purposes. The results of the vertical profile sampling are included in Table 1.

Two groundwater sampling events were conducted. The first event was completed in September 2018 and included new monitoring wells MW-109S/D and MW-110S/D, and existing wells MW-102S/D and MW-34IL/D. Following completion of the well installation activities, groundwater samples were collected in December 2018 using low flow purge methods from the sixteen previously installed monitoring wells and thirteen newly installed monitoring wells. Note, monitoring wells MW-109S and MW-110D/S were not sampled during the December 2018 event due to severe weather. Prior to sampling, a synoptic water level event was completed in the "100 series" wells.

All groundwater samples were collected directly into laboratory-provided bottleware, placed on ice in a cooler, and transferred to the laboratory for analysis under standard chain-of-custody procedures. Samples were analyzed for PFAS by SGS Laboratory of Orlando, Florida. Quality Assurance/Quality Control (QA/QC) protocols for groundwater sample collection are provided in the project Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP) (Appendices A and B of the 2015 Workplan).

The analytical chemistry results for the September 2018 groundwater sampling event are included in Table 2, presented on Figure 2 and summarized below.

- Perfluorooctanoic Acid (PFOA) exceeded the NJDEP Interim Specific Ground Water Quality Criteria (ISGWQC) of 0.01 µg//L in all sample locations except MW-109D. Concentrations in these wells ranged from 0.0371 µg/L to 0.749 µg/L.
- Perfluorooctane Sulfonate (PFOS) exceeded the NJDEP ISGWQC of 0.01 µg//L in monitoring wells MW-102S, MW-109S, MW-110D/S. Concentrations in these wells ranged from 0.0181 µg/L to 0.0562 µg/L.
- Perfluorononanoic Acid (PFNA) exceeded the NJDEP Groundwater Quality Standard (GWQS) of 0.013 µg//L in all sample locations. Concentrations in these wells ranged from 0.0451 µg/L to 4.3 µg/L.

The results of the December 2018 groundwater sampling event are included in Table 3, presented on Figure 2 and summarized below.

- PFOA exceeded the NJDEP ISGWQC (0.01 µg/L) in monitoring wells MW-101D/S, MW-102D/S, MW-103S, MW-104D/S, MW-107D/S, MW-108S, MW-111D/S, MW-112D/S, MW-113S, MW-114S, MW-120D/S, and MW-121D/S. Concentrations in these wells ranged from 0.014 µg/L to 0.248 J µg/L.

- PFOS exceeded the NJDEP ISGWQC (0.01 µg//L) in monitoring wells MW-101S, MW-102S, MW-103S, MW-106D/S, MW-111D/S, MW-113S, MW-120D/S, and MW-121D/S. Concentrations in these wells ranged from 0.0121 µg/L to 0.21 µg/L.

- PFNA exceeded the NJDEP GWQS (0.013 µg//L) in monitoring wells MW-101D/S, MW-102D/S, MW-103D/S, MW-104D/S, MW-105S, MW-107D/S, MW-108S, MW-109D, MW-111D/S, MW-112D/S, MW-113S, MW-114D/S, MW-120D/S, and MW-121D/S. Concentrations in these wells ranged from 0.015 µg/L to 1.46 µg/L.

Well permits, completion reports, and survey forms for newly installed monitoring wells will be submitted to the NJDEP in the Remedial Investigation Report (RIR). Potentiometric groundwater surface maps will be prepared based on contouring of the water elevation measurements grouped by sampling event. EDDs will be emailed to srpedd@dep.nj.gov in conjunction with the RIR, per NJDEP guidelines.

Anticipated Work

The following activities are proposed as part of continued groundwater RI activities.

Groundwater (Offsite). Install up to twelve (12) additional monitoring wells (Figure 3) as part of continued RI activities and measure groundwater levels and collect samples for PFAS analysis from the new monitoring wells and from the 32 existing "100 series" wells. The installation of the additional monitoring wells is contingent upon gaining access from landowners. If Solvay is unable to obtain access to a specific location, an alternate location will be evaluated by the LSRP. Well installation and sampling will be completed consistent with prior work plans and the FSP prepared for the project and is summarized below. Consistent with prior well installation activities, a well couplet (2 individual wells at each location screened in the UPRM) will be installed at each location except at proposed locations MW-118 and MW-119, as the thickness of the UPRM is not anticipated to be greater than 50 feet at these locations. If field conditions indicate that an additional well is necessary at the location due to the lithology, a second well will be installed.

Vertical Profile Sampling During Drilling: As many as three groundwater samples will be collected during installation of the deep well pilot borehole for vertical profile characterization as follows: 1 sample from approximately 20 ft below the Merchantville Formation, the second sample from the approximate mid-point of the UPRM aquifer unit and the third sample from the base of the UPRM (above the clay confining unit). The samples will be analyzed for PFAS.

Well Construction: Monitoring wells are anticipated to be constructed using 2-inch diameter PVC riser and screen with a 10 ft. screen interval (.10 slot screen size, #1 sand pack). The well completion (flush mount or stick-up protective casing) will be based on the requirements of the landowner. Completed monitoring wells will be surveyed by a New Jersey licensed land surveyor. All appropriate documentation will be submitted to the NJDEP in a final RI Report.

Groundwater Sampling: Groundwater samples will be collected from the 32 previously installed "100 series" monitoring wells and the newly installed monitoring wells, allowing for a minimum interval of two weeks following completion of the new wells. Samples will be collected using low flow purge methods and analyzed for PFAS by a NJDEP certified analytical laboratory. QA/QC protocols for groundwater sample collection are provided in the QAPP and FSP prepared for the project (Appendices A and B of the 2015 Workplan). Prior to sampling, a synoptic water level event will be completed in all investigation wells accessible for gauging.

Reporting: An interim data submittal will be provided to the NJDEP following the completion of the RI activities included herein. Following completion of all RI activities a RIR will be prepared for the project. The RIR will include tables and a map of well locations, well drillers reports, and boring and development logs for newly installed monitoring wells. Potentiometric groundwater surface maps will be prepared based on contouring of the water elevation measurements grouped by sampling event. EDDs will be emailed to srpedd@dep.nj.gov in conjunction with the RIR, per NJDEP guidelines.

REFERENCES

Integral. 2015. Work plan perfluoroalkyl compounds, West Deptford, New Jersey Plant. Prepared for Solvay Specialty Polymers USA, LLC, West Deptford, NJ. Integral Consulting Inc., Cherry Hill, NJ.

Integral. 2017. Perfluoroalkyl Compound Investigation Report, West Deptford, New Jersey Plant. Prepared for Solvay Specialty Polymers USA, LLC, West Deptford, NJ. Integral Consulting Inc., Cherry Hill, NJ.

Integral. 2018. Technical Memorandum, West Deptford, New Jersey Plan. Prepared for New Jersey Department of Environmental Protection, Trenton, NJ. Integral Consulting Inc., Cherry Hill, NJ.

TABLES

1. Vertical Delineation Solvay Groundwater Event
2. September 2018 Solvay Groundwater Event
3. December 2018 Solvay Groundwater Event

Table 1. Vertical Delineation Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-109D	MW-109D	MW-109D	MW-109D	MW-109D	MW-110D
			Sample Identification:	MW109D_87.0_072618	MW109D_127.0_072618	MW109D_157.0_072718	MW109D_197.0_073018	MW109D_267.0_080218	MW110D_97.0_081518
			Laboratory Identification:	FA56217-1	FA56217-2	FA56217-3	FA56465-1	FA56465-2	FA57001-1
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.0023 *U*	0.0023 *U*	0.0023 *U*	0.0019 *U*	0.0019 *U*	0.0023 *U*
PERFLUORODECANOIC ACID	µg/L	NA		0.00983	0.00831 *J*	0.00343 *J*	0.00374 *J*	0.0019 *U*	0.0023 *U*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0034 *U*	0.0034 *U*	0.0034 *U*	0.0029 *U*	0.0029 *U*	0.0034 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.0233	0.0167	0.00993	0.0123	0.00328 *J*	0.00971
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.0053 *J*	0.00491 *J*	0.00549 *J*	0.00643 *J*	0.00204 *J*	0.00317 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.0118	0.00866 *J*	0.00561 *J*	0.00681 *J*	0.00209 *J*	0.00728 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		2.03	1.89	0.652	0.658	0.049	0.578
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.0263	0.0245	0.0194	0.0232	0.00565 *J*	0.0142
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.303 *J*	0.182	0.128	0.123	0.00898 *J*	0.18
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0023 *U*	0.0023 *U*	0.0023 *U*	0.0019 *U*	0.0019 *UJ*	0.0023 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0023 *U*	0.0023 *U*	0.0023 *U*	0.0019 *U*	0.0019 *UJ*	0.0023 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.00558 *J*	0.00656 *J*	0.00246 *J*	0.0019 *U*	0.0019 *U*	0.0023 *U*

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

Highlighted indicates value exceeds NJDEP GW Quality Criterion or ISGWQC.

NA = not available for this constituent

Data Qualifiers:

BR = result was qualified as nondetect because the estimated concentration was less than 3 times the concentration detected in the associated lab or field blank

J = reported result is an estimate

U = compound was not detected; the value reported is the method detection limit

UJ = compound or analyte was reported as not detected by the laboratory; however, the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

Table 1. Vertical Delineation Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-110D	MW-110D	MW-110D	MW-111D	MW-111D	MW-111D
			Sample Identification:	MW110D_137.0_081518	MW110D_177.0_081618	MW110D_225.0_082018	MW-111D_57.0_082918	MW-111D_87.0_082918	MW-111D_117.0_083018
			Laboratory Identification:	FA57001-2	FA57001-3	FA57038-1	FA57333-1	FA57333-2	FA57333-3
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.00216 *J*	0.0023 *U*	0.00226 *J*	0.0019 *U*	0.00293 *J*	0.00308 *J*
PERFLUORODECANOIC ACID	µg/L	NA		0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0019 *U*	0.00534 *J*	0.00604 *J*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0031 *U*	0.0034 *U*	0.0031 *U*	0.0029 *UJ*	0.0029 *UJ*	0.0029 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.0105	0.00708 *J*	0.00984	0.00318 *J*	0.00474 *J*	0.0162
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00345 *J*	0.00376 *J*	0.00422 *J*	0.0019 *U*	0.00223 *J*	0.00774
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00599 *J*	0.00441 *J*	0.0051 *J*	0.00303 *J*	0.00386 *J*	0.00771
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.797	0.421	0.696	0.0278	0.335	1.9
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.00916	0.0142	0.0176	0.0029 *U*	0.00777	0.0369
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.207	0.0904	0.206	0.00638 *J*	0.023	0.397
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0019 *UJ*	0.0019 *UJ*	0.0019 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0019 *UJ*	0.0019 *UJ*	0.0019 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0019 *UJ*	0.0168 *J*	0.00402 *J*

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

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Table 1. Vertical Delineation Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-112D	MW-112D	MW-112D	MW-112D	MW-112D	MW-113D
			Sample Identification:	MW112D_137.0_111318	MW112D_167.0_111318	MW112D_197.0_111418	DUP03_111418 (MW112D_197.0_111418)	MW112D_227.0_111518	MW113D_117.0_101718
			Laboratory Identification:	FA59452-1	FA59452-3	FA59452-4	FA59452-2	FA59452-7	FA58746-2
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.0023 *U*	0.0021 *U*	0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0011 *U*
PERFLUORODECANOIC ACID	µg/L	NA		0.0023 *U*	0.0021 *U*	0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0011 *U*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0034 *U*	0.0031 *U*	0.0031 *U*	0.0034 *U*	0.0031 *U*	0.0016 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.00289 *J*	0.0652	0.0581	0.0575	0.0028 *J*	0.00278 *J*
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.0023 *U*	0.0021 *U*	0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0014 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.0023 *U*	0.00824 *J*	0.00839	0.00883 *J*	0.0021 *U*	0.00387 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.00543 *J*	0.437	0.487	0.459	0.00547 *J*	0.00696
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.0034 *U*	0.0031 *U*	0.0031 *U*	0.0034 *U*	0.0031 *U*	0.00278 *BR*
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.00337 *J*	0.0899	0.091	0.0914	0.00284 *J*	0.00439 *J*
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0023 *UJ*	0.0021 *UJ*	0.0021 *UJ*	0.0023 *UJ*	0.0021 *UJ*	0.0011 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0023 *UJ*	0.0021 *UJ*	0.0021 *UJ*	0.0023 *UJ*	0.0021 *UJ*	0.0011 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.0023 *U*	0.0021 *U*	0.0021 *U*	0.0023 *U*	0.0021 *U*	0.0011 *U*

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

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Table 1. Vertical Delineation Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-113D	MW-113D	MW-113D	MW-113D	MW-114-D	MW-114-D
			Sample Identification:	MW113D_147.0_101818	MW113D_177.0_101818	MW113D_207.0_102218	MW113D_237.0_102318	MW114D_167.0_092718	MW114D_197.0_092818
			Laboratory Identification:	FA58746-4	FA58746-5	FA58746-6	FA58746-7	FA58217-2	FA58217-3
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.00122 *J*	0.001 *U*	0.001 *U*	0.0019 *U*	0.0021 *U*	0.00148 *J*
PERFLUORODECANOIC ACID	µg/L	NA		0.00096 *U*	0.001 *U*	0.001 *U*	0.0019 *U*	0.0021 *U*	0.0012 *U*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0014 *U*	0.0015 *U*	0.0015 *U*	0.0029 *U*	0.0031 *U*	0.0018 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.00542	0.001 *U*	0.00395 *J*	0.0029 *J*	0.00411 *J*	0.00169 *J*
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00429	0.001 *U*	0.00226 *J*	0.0019 *U*	0.00298 *J*	0.00293 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00619	0.00224 *J*	0.00409	0.00372 *J*	0.00274 *J*	0.00156 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.172	0.00679	0.0724	0.00318 *J*	0.0669	0.0028 *J*
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.00708 *J*	0.00199 *BR*	0.00473 *BR*	0.0029 *U*	0.00658	0.00328 *J*
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.0275	0.00336 *J*	0.0112	0.00475 *J*	0.00471 *J*	0.00396 *J*
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.00096 *U*	0.001 *U*	0.001 *U*	0.0019 *U*	0.0021 *U*	0.0012 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.00096 *U*	0.001 *U*	0.001 *U*	0.0019 *U*	0.0021 *U*	0.0012 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.00096 *U*	0.001 *U*	0.001 *U*	0.0019 *U*	0.0021 *U*	0.0012 *U*

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

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Table 1. Vertical Delineation Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-114-D	MW-114-D	MW-114D	MW-120D	MW-120D	MW-120D
			Sample Identification:	MW114D_227.0_100118	DUP02_100118	MW114D_267.0_100218	MW-120D_47.0_091118	MW-120D_77.0_091118	MW-120D_107.0_091218
			Laboratory Identification:	FA58217-5	FA58217-6	FA58746-1	FA57607-1	FA57607-2	FA57607-4
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.00524	0.00455	0.00226 *J*	0.0038 *U*	0.0023 *U*	0.0019 *U*
PERFLUORODECANOIC ACID	µg/L	NA		0.001 *U*	0.001 *U*	0.00162 *J*	0.0038 *U*	0.0023 *U*	0.0019 *U*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0015 *U*	0.0015 *U*	0.0015 *U*	0.0058 *UJ*	0.0035 *UJ*	0.0029 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.0023 *J*	0.00215 *J*	0.00217 *J*	0.00827 *J*	0.00297 *J*	0.00618 *J*
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00184 *J*	0.00189 *J*	0.00134 *J*	0.00439 *J*	0.0023 *U*	0.00592 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00125 *J*	0.00133 *J*	0.00555	0.0071 *J*	0.0023 *U*	0.00444 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.0149	0.0143	0.00665 *J*	0.389	0.0861	0.246
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.00496	0.00501	0.00499 *BR*	0.0176	0.00558 *J*	0.0142
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.0028 *J*	0.00281 *J*	0.00734 *J*	0.053	0.02	0.0604
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.001 *U*	0.001 *U*	0.001 *U*	0.0038 *U*	0.0023 *UJ*	0.0019 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.001 *U*	0.001 *U*	0.001 *U*	0.0038 *U*	0.0023 *UJ*	0.0019 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.001 *U*	0.001 *U*	0.001 *U*	0.0038 *U*	0.0023 *U*	0.0019 *U*

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

Highlighted indicates value exceeds NJDEP GW Quality Criterion or ISGWQC.

NA = not available for this constituent

Data Qualifiers:

BR = result was qualified as nondetect because the estimated concentration was less than 3 times the concentration detected in the associated lab or field blank

J = reported result is an estimate

U = compound was not detected; the value reported is the method detection limit

UJ = compound or analyte was reported as not detected by the laboratory; however, the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

Table 1. Vertical Delineation Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-120D	MW-121D	MW-121D	MW-121D	MW-121D
			Sample Identification:	MW120D_132.0_091318	MW121D_67.0_103018	MW121D_97.0_103018	MW121D_127.0_103118	MW121D_182.0_110118
			Laboratory Identification:	FA58217-1	FA59057-1	FA59057-2	FA59057-4	FA59057-5
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.0021 *U*	0.0029 *J*	0.00292 *J*	0.0021 *U*	0.0021 *U*
PERFLUORODECANOIC ACID	µg/L	NA		0.0021 *U*	0.00307 *J*	0.00574 *J*	0.0021 *U*	0.0021 *U*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0031 *U*	0.0031 *U*	0.0031 *U*	0.0031 *U*	0.0031 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.00637 *J*	0.00461 *J*	0.00369 *J*	0.004 *J*	0.00394 *J*
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00468 *J*	0.0027 *J*	0.0021 *U*	0.00261 *J*	0.00338 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00643 *J*	0.00628 *J*	0.00556 *J*	0.00307 *J*	0.00416 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.338	0.324	0.248	0.32	0.277
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.0986	0.0142	0.0115	0.0117 *J*	0.0165
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.0161	0.0684	0.0508	0.0538	0.0454
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0021 *U*	0.0021 *U*	0.0021 *U*	0.0021 *U*	0.0021 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0021 *U*	0.0021 *U*	0.0021 *U*	0.0021 *U*	0.0021 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.0021 *U*	0.00284 *J*	0.0042 *U*	0.00282 *J*	0.0021 *U*

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

Highlighted indicates value exceeds NJDEP GW Quality Criterion or ISGWQC.

NA = not available for this constituent

Data Qualifiers:

BR = result was qualified as nondetect because the estimated concentration was less than 3 times the concentration detected in the associated lab or field blank

J = reported result is an estimate

U = compound was not detected; the value reported is the method detection limit

UJ = compound or analyte was reported as not detected by the laboratory; however, the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

Table 2. September 2018 Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-34D	MW-34IL	MW-102D	MW-102S	MW-109D	MW-109S	MW-110D	MW-110S
			Sample Identification:	34D-09122018-GW	34IL-09122018-GW	102D-09102018-GW	102S-09102018-GW	109D-09112018-GW	109S-09112018-GW	110D-09112018-GW	110S-09112018-GW
			Laboratory Identification:	FA57608-8	FA57608-7	FA57608-2	FA57608-1	FA57608-3	FA57608-4	FA57608-6	FA57608-5
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.002 *U*	0.001 *U*	0.00297 *J*	0.00304 *J*	0.0014 *U*	0.00603 *J*	0.00171 *J*	0.00255 *J*
PERFLUORODECANOIC ACID	µg/L	NA		0.00723 *J*	0.00368 *J*	0.00226 *J*	0.0015 *U*	0.0014 *U*	0.0161 *J*	0.00345 *J*	0.0055
PERFLUORODODECANOIC ACID	µg/L	NA		0.003 *U*	0.0015 *U*	0.0015 *U*	0.0022 *U*	0.0021 *U*	0.00377 *J*	0.0016 *UJ*	0.0016 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.0752	0.062	0.00729	0.0108	0.00287 *J*	0.0258 *J*	0.014	0.0214
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00439 *J*	0.00203 *J*	0.00241 *J*	0.00644	0.00145 *J*	0.00956 *J*	0.00662	0.00749
PERFLUOROHEXANOIC ACID	µg/L	NA		0.0208	0.0141	0.00683	0.00746	0.0015 *J*	0.0141 *J*	0.00696	0.0111
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		4.3	1.99	0.108	0.443	0.0451	2.51 *J*	0.987	2.33
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.00848	0.00376 *J*	0.0071	0.0181	0.00457 *J*	0.0562 *J*	0.0275	0.0421
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.749	0.356	0.0371	0.117	0.00703	0.391 *J*	0.213	0.453
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.001 *U*	0.001 *U*	0.001 *U*	0.0015 *U*	0.0014 *U*	0.001 *UJ*	0.0011 *UJ*	0.0011 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.001 *U*	0.001 *U*	0.001 *U*	0.0015 *U*	0.0014 *U*	0.001 *UJ*	0.0011 *UJ*	0.0011 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.002 *U*	0.0011 *J*	0.00683	0.0015 *U*	0.0014 *U*	0.0109 *J*	0.0011 *U*	0.00317 *J*

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

Highlighted indicates value exceeds NJDEP GW Quality Criterion or ISGWQC.

NA = not available for this constituent

Data Qualifiers:

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UJ = compound or analyte was reported as not detected by the laboratory; however, the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

Table 3. December 2018 Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-101D	MW-101S	MW-101S	MW-101S	MW-102D	MW-102S	MW-103D
			Sample Identification:	MW-101D-12172018	MW-101S-12172018	MW-101S-12172018-DUP	DUP-12202018	MW-102D-12202018	MW-102S-12202018	MW-103D12202018
			Laboratory Identification:	JC79977-2	JC79977-1	JC79977-5	JC80244-1	JC80244-2	JC80244-3	JC80150-11
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.0025 *U*	0.00231 *J*	0.00226 *J*	0.00265 *J*	0.00174 *J*	0.00114 *J*	0.00185 *J*
PERFLUORODECANOIC ACID	µg/L	NA		0.0025 *U*	0.0021 *U*	0.0021 *U*	0.0114	0.01 *U*	0.001 *U*	0.0012 *U*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0038 *U*	0.0031 *U*	0.0031 *U*	0.0016 *U*	0.0078 *U*	0.0016 *U*	0.0018 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.00744 *J*	0.00897	0.00941	0.0152	0.00786	0.0114	0.00317 *J*
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00515 *J*	0.00316 *J*	0.00318 *J*	0.00332 *J*	0.0031 *J*	0.00548	0.0012 *U*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00486 *J*	0.0103	0.0103	0.0141	0.00795	0.00956	0.00346 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.108	0.0965	0.0933	0.834	0.154	0.359	0.0302
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.00696 *J*	0.00719 *J*	0.00737 *J*	0.0175	0.00874	0.014	0.0081
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.0275	0.0486	0.0459	0.0816	0.0513	0.102	0.00906
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0025 *U*	0.0021 *U*	0.0021 *U*	0.001 *U*	0.001 *U*	0.001 *U*	0.0012 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0025 *U*	0.0021 *U*	0.0021 *U*	0.001 *U*	0.001 *U*	0.001 *U*	0.0012 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.0025 *U*	0.0021 *U*	0.0021 *U*	0.0812	0.00613 *J*	0.001 *U*	0.00221 *J*
SULFATE	mg/L	250		-- --	-- --	-- --	-- --	-- --	-- --	-- --
BROMIDE	mg/L	NA		-- --	-- --	-- --	-- --	-- --	-- --	-- --
CHLORIDE	mg/L	250		-- --	-- --	-- --	-- --	-- --	-- --	-- --
FLUORIDE (TOTAL)	mg/L	2		-- --	-- --	-- --	-- --	-- --	-- --	-- --
CALCIUM	µg/L	NA		-- --	-- --	-- --	-- --	-- --	-- --	-- --
IRON	µg/L	300		-- --	-- --	-- --	-- --	-- --	-- --	-- --
MAGNESIUM	µg/L	NA		-- --	-- --	-- --	-- --	-- --	-- --	-- --
MANGANESE	µg/L	50		-- --	-- --	-- --	-- --	-- --	-- --	-- --
POTASSIUM	µg/L	NA		-- --	-- --	-- --	-- --	-- --	-- --	-- --
SODIUM	µg/L	50,000		-- --	-- --	-- --	-- --	-- --	-- --	-- --
Alkalinity, Total as CaCO3	mg/L	NA		-- --	-- --	-- --	-- --	-- --	-- --	-- --

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

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Table 3. December 2018 Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-103S		MW-104D		MW-104S		MW-105D		MW-105S		MW-106D		MW-106S	
			Sample Identification:	MW-103S-12202018		MW-104D12202018		MW-104S-12202018		MW-105D-12192018		MW-105S-12192018		MW-106D-12192018		MW-106S-12192018	
			Laboratory Identification:	JC80244-4		JC80150-10		JC80150-21		JC80150-19		JC80150-18		JC80150-16		JC80150-15	
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.00144 *J*		0.002 *U*		0.002 *U*		0.002 *U*		0.0021 *U*		0.0022 *U*		0.0021 *U*	
PERFLUORODECANOIC ACID	µg/L	NA		0.00107 *J*		0.002 *U*		0.002 *U*		0.002 *U*		0.0021 *U*		0.0022 *U*		0.0021 *U*	
PERFLUORODODECANOIC ACID	µg/L	NA		0.0015 *U*		0.0031 *U*		0.003 *U*		0.003 *U*		0.0032 *U*		0.0032 *U*		0.0031 *U*	
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.0092		0.0586		0.045		0.002 *U*		0.0021 *U*		0.0022 *U*		0.0021 *U*	
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00619		0.002 *U*		0.0021 *J*		0.002 *U*		0.0021 *U*		0.00968		0.0021 *U*	
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00561		0.00669 *J*		0.00585 *J*		0.002 *U*		0.0021 *U*		0.0022 *U*		0.0021 *U*	
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.473		0.717		0.614 *J*		0.00676 *J*		0.015		0.00546 *J*		0.00883	
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.0138		0.0031 *U*		0.00966 *BR*		0.003 *U*		0.0032 *U*		0.21		0.0171	
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.0897		0.0735		0.063		0.002 *U*		0.00483 *J*		0.0022 *U*		0.0085	
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.001 *U*		0.002 *U*		0.002 *U*		0.002 *U*		0.0021 *U*		0.0022 *U*		0.0021 *U*	
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.001 *U*		0.002 *U*		0.002 *U*		0.002 *U*		0.0021 *U*		0.0022 *U*		0.0021 *U*	
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.00117 *J*		0.002 *U*		0.002 *U*		0.002 *U*		0.0021 *U*		0.0022 *U*		0.0021 *U*	
SULFATE	mg/L	250		--	--	--	--	--	--	--	--	--	--	--	--	--	--
BROMIDE	mg/L	NA		--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHLORIDE	mg/L	250		--	--	--	--	--	--	--	--	--	--	--	--	--	--
FLUORIDE (TOTAL)	mg/L	2		--	--	--	--	--	--	--	--	--	--	--	--	--	--
CALCIUM	µg/L	NA		--	--	--	--	--	--	--	--	--	--	--	--	--	--
IRON	µg/L	300		--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAGNESIUM	µg/L	NA		--	--	--	--	--	--	--	--	--	--	--	--	--	--
MANGANESE	µg/L	50		--	--	--	--	--	--	--	--	--	--	--	--	--	--
POTASSIUM	µg/L	NA		--	--	--	--	--	--	--	--	--	--	--	--	--	--
SODIUM	µg/L	50,000		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Alkalinity, Total as CaCO3	mg/L	NA		--	--	--	--	--	--	--	--	--	--	--	--	--	--

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

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Table 3. December 2018 Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-107D	MW-107S	MW-108D	MW-108S	MW-109D	MW-111D	MW-111S
			Sample Identification:	MW-107D-12182018	MW-107S-12182018	MW-108D12182018	MW108S-12172018	MW-109D12182018	MW-111D-12202018	MW-111S-12202018
			Laboratory Identification:	JC80150-3	JC80150-4	JC80150-2	JC79977-8	JC80150-1	JC80244-5	JC80244-6
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.0019 *U*	0.002 *U*	0.0021 *U*	0.0021 *U*	0.002 *U*	0.00136 *J*	0.00266 *J*
PERFLUORODECANOIC ACID	µg/L	NA		0.0019 *U*	0.002 *U*	0.0021 *U*	0.0021 *U*	0.002 *U*	0.00423	0.012
PERFLUORODODECANOIC ACID	µg/L	NA		0.0028 *U*	0.003 *U*	0.0031 *U*	0.0031 *U*	0.003 *U*	0.0015 *U*	0.0016 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.0391	0.0266	0.0021 *U*	0.0297	0.002 *U*	0.0108	0.0146
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00427 *J*	0.0032 *J*	0.0021 *U*	0.0021 *U*	0.002 *U*	0.0047	0.00316 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.0202	0.0117	0.0021 *U*	0.0035 *J*	0.002 *U*	0.0064	0.0139
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.415	0.31	0.0021 *U*	0.163	0.0422	1.31	0.728
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.0028 *U*	0.003 *U*	0.0031 *U*	0.0031 *U*	0.003 *U*	0.0247	0.0147
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.177 *J*	0.0981	0.0021 *UJ*	0.03	0.00703 *J*	0.248 *J*	0.078
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0019 *U*	0.002 *U*	0.0021 *U*	0.0021 *U*	0.002 *U*	0.001 *U*	0.001 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0019 *U*	0.002 *U*	0.0021 *U*	0.0021 *U*	0.002 *U*	0.001 *U*	0.001 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.0019 *U*	0.002 *U*	0.0021 *U*	0.0021 *U*	0.002 *U*	0.00334 *J*	0.0824
SULFATE	mg/L	250		-- --	-- --	-- --	-- --	33.1	19.2	21.1
BROMIDE	mg/L	NA		-- --	-- --	-- --	-- --	0.5 *U*	0.5 *U*	0.5 *U*
CHLORIDE	mg/L	250		-- --	-- --	-- --	-- --	33.5	51.8	69.2
FLUORIDE (TOTAL)	mg/L	2		-- --	-- --	-- --	-- --	0.95	0.59	0.2 *U*
CALCIUM	µg/L	NA		-- --	-- --	-- --	-- --	14700	12900	12400
IRON	µg/L	300		-- --	-- --	-- --	-- --	2970	3140	20300
MAGNESIUM	µg/L	NA		-- --	-- --	-- --	-- --	5000 *U*	5000 *U*	5590
MANGANESE	µg/L	50		-- --	-- --	-- --	-- --	42.6	209	339
POTASSIUM	µg/L	NA		-- --	-- --	-- --	-- --	10000 *U*	10000 *U*	10000 *U*
SODIUM	µg/L	50,000		-- --	-- --	-- --	-- --	67100	56500	26300
Alkalinity, Total as CaCO3	mg/L	NA		-- --	-- --	-- --	-- --	116	28.4	42

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

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NA = not available for this constituent

Data Qualifiers:

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Table 3. December 2018 Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-112D	MW-112S	MW-113D	MW-113S	MW-114D	MW-114S	MW-120D
			Sample Identification:	MW-112D-12202018	MW-112S-12202018	MW-113D-12192018	MW-113S-12192018	MW-114D-12192018	MW-114S-12192018	MW-120D-12172018
			Laboratory Identification:	JC80150-17	JC80150-12	JC80150-6	JC80150-5	JC80150-7	JC80150-8	JC79977-4
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.0009 *U*	0.00089 *U*	0.002 *U*	0.002 *U*	0.0022 *U*	0.002 *U*	0.0025 *U*
PERFLUORODECANOIC ACID	µg/L	NA		0.0009 *U*	0.00089 *U*	0.002 *U*	0.002 *U*	0.0022 *U*	0.002 *U*	0.00263 *J*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0013 *U*	0.0013 *U*	0.0029 *U*	0.0031 *U*	0.0033 *U*	0.0031 *U*	0.0038 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.0108	0.09	0.002 *U*	0.00959	0.00553 *J*	0.00909	0.0092 *J*
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.0009 *U*	0.00089 *U*	0.002 *U*	0.00438 *J*	0.0022 *U*	0.00513 *J*	0.00872 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00212 *J*	0.011	0.002 *U*	0.00673 *J*	0.0022 *U*	0.00469 *J*	0.00667 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.0788	1.46	0.00584 *J*	0.34	0.046	0.162	0.694
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.0025 *J*	0.0013 *U*	0.0029 *U*	0.0121	0.0033 *U*	0.00867	0.0268
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.014	0.133	0.00445 *J*	0.0774 *J*	0.00854 *J*	0.0213	0.196
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0009 *U*	0.00089 *U*	0.002 *U*	0.002 *U*	0.0022 *U*	0.002 *U*	0.0025 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0009 *U*	0.00089 *U*	0.002 *U*	0.002 *U*	0.0022 *U*	0.002 *U*	0.0025 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.0009 *U*	0.00089 *U*	0.002 *U*	0.002 *U*	0.0022 *U*	0.002 *U*	0.0025 *U*
SULFATE	mg/L	250		43.2	66.4	36.3	7.6	24.8	34.6	21.2
BROMIDE	mg/L	NA		0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
CHLORIDE	mg/L	250		35.8	27.9	30.2	40.1	32	26.2	36.2
FLUORIDE (TOTAL)	mg/L	2		1.1	0.2 *U*	0.87	0.36	0.53	0.26	0.2 *U*
CALCIUM	µg/L	NA		7370	34000	11400	13100	37300	30500	17500
IRON	µg/L	300		480	6250	911	664	19800	1180	21100
MAGNESIUM	µg/L	NA		5000 *U*	8550	5000 *U*	5000 *U*	10000 *U*	8600	5000 *U*
MANGANESE	µg/L	50		42.7	250	39.7	37.6	484	56.2	544
POTASSIUM	µg/L	NA		22400	24600	25400	12700	102000	27200	10000 *U*
SODIUM	µg/L	50,000		63400	21800	65400	29800	79200	26700	22500
Alkalinity, Total as CaCO3	mg/L	NA		127	74	65.1	78.8	517	129	49.4

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

Highlighted indicates value exceeds NJDEP GW Quality Criterion or ISGWQC.

NA = not available for this constituent

Data Qualifiers:

BR = result was qualified as nondetect because the estimated concentration was less than 3 times the concentration detected in the associated lab or field blank

J = reported result is an estimate

U = compound was not detected; the value reported is the method detection limit

UJ = compound or analyte was reported as not detected by the laboratory; however, the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

Table 3. December 2018 Solvay Groundwater Event

Analyte	Units	NJDEP GW Quality Criterion*	Sample Location:	MW-120S	MW-121D	MW-121S
			Sample Identification:	MW-120S-12172018	MW-121D-12202018	MW-121S-12202018
			Laboratory Identification:	JC79977-3	JC80150-14	JC80150-13
PERFLUOROBUTANE SULFONIC ACID	µg/L	NA		0.0021 *U*	0.002 *U*	0.0022 *U*
PERFLUORODECANOIC ACID	µg/L	NA		0.0021 *U*	0.002 *U*	0.00415 *J*
PERFLUORODODECANOIC ACID	µg/L	NA		0.0031 *U*	0.003 *U*	0.0033 *U*
PERFLUOROHEPTANOIC ACID	µg/L	NA		0.00945	0.00715 *J*	0.00969
PERFLUOROHEXANE SULFONIC ACID	µg/L	NA		0.00557 *J*	0.00592 *J*	0.00639 *J*
PERFLUOROHEXANOIC ACID	µg/L	NA		0.00785 *J*	0.00457 *J*	0.00673 *J*
PERFLUORONONANOIC ACID (PFNA)	µg/L	0.013		0.446	0.412	0.807
PERFLUOROOCTANE SULFONATE (PFOS)	µg/L	0.01**		0.0199	0.0283	0.0493
PERFLUOROOCTANOIC ACID (PFOA)	µg/L	0.01**		0.0931	0.0701	0.165
PERFLUOROTETRADECANOIC ACID	µg/L	NA		0.0021 *U*	0.002 *U*	0.0022 *U*
PERFLUOROTRIDECANOIC ACID	µg/L	NA		0.0021 *U*	0.002 *U*	0.0022 *U*
PERFLUOROUNDECANOIC ACID	µg/L	NA		0.0021 *U*	0.002 *U*	0.00407 *J*
SULFATE	mg/L	250		20.6	18.7	2 *U*
BROMIDE	mg/L	NA		0.5 *U*	0.5 *U*	0.5 *U*
CHLORIDE	mg/L	250		36.4	32.8	50.7
FLUORIDE (TOTAL)	mg/L	2		0.2 *U*	0.24	0.28
CALCIUM	µg/L	NA		10400	20100	39600
IRON	µg/L	300		26400	9870	7220
MAGNESIUM	µg/L	NA		5000 *U*	5000 *U*	7870
MANGANESE	µg/L	50		537	223	113
POTASSIUM	µg/L	NA		10000 *U*	10000 *U*	10000 *U*
SODIUM	µg/L	50,000		22100	28300	30700
Alkalinity, Total as CaCO3	mg/L	NA		27.8	91.4	126

* Source: N.J.A.C. 7:9C Ground Water Quality Standards Appendix Table 1 (August 2018)

**Source: Table of Interim Specific Ground Water Quality Criteria (ISGWQC), Interim PQLs (IPQLs), and Interim Specific Ground Water Quality Standards (ISGWQS) for Constituents in Class II-A Ground Water (March 2019)

Notes:

Highlighted indicates value exceeds NJDEP GW Quality Criterion or ISGWQC.

NA = not available for this constituent

Data Qualifiers:

BR = result was qualified as nondetect because the estimated concentration was less than 3 times the concentration detected in the associated lab or field blank

J = reported result is an estimate

U = compound was not detected; the value reported is the method detection limit

UJ = compound or analyte was reported as not detected by the laboratory; however, the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

FIGURES

1. Monitoring Wells
2. Monitoring Wells with PFNA, PFOA, PFOS Results
3. Proposed Monitoring Wells

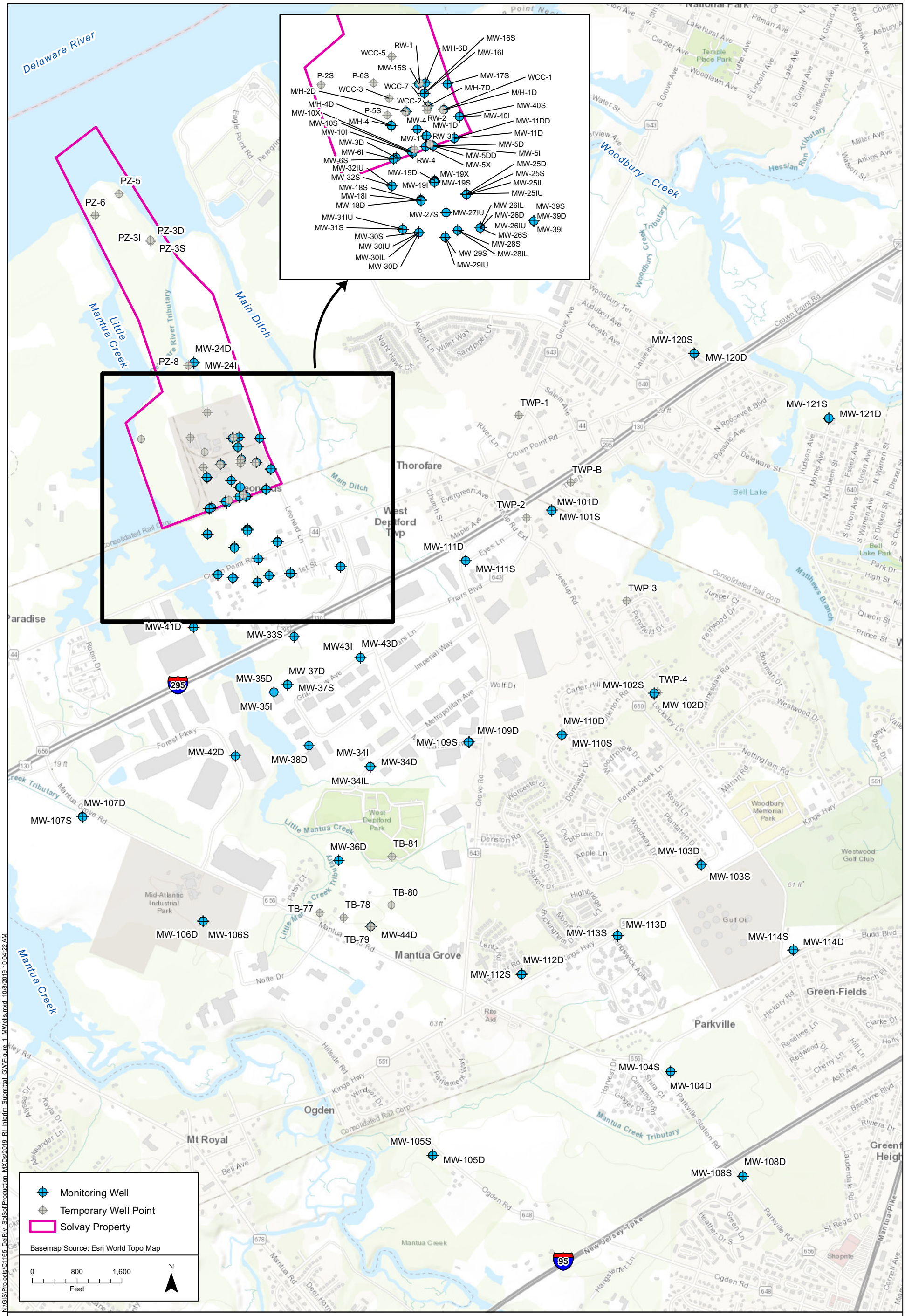

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Figure 1.
Monitoring Wells

	MW-120S	MW-120D
PFNA	0.446	0.694
PFOA	0.0931	0.196
PFOS	0.0199	0.0268

	MW-101S	MW-101D
PFNA	0.0965	0.108
PFOA	0.0486	0.0275
PFOS	0.00719 J	0.00696 J

	MW-121S	MW-121D
PFNA	0.807	0.412
PFOA	0.165	0.0701
PFOS	0.0493	0.0283

	MW-111S	MW-111D
PFNA	0.728	1.31
PFOA	0.078	0.248 J
PFOS	0.0147	0.0247

	MW-107S	MW-107D
PFNA	0.31	0.415
PFOA	0.0981	0.177 J
PFOS	0.003 U	0.0028 U

	MW-110S	MW-110D
PFNA	2.33	0.987
PFOA	0.453	0.213
PFOS	0.0421	0.0275

	MW-102S	MW-102D
PFNA	0.359	0.154
PFOA	0.102	0.0513
PFOS	0.014	0.0087

	MW-109S	MW-109D
PFNA	2.51 J	0.0451
PFOA	0.391 J	0.00703
PFOS	0.0562 J	0.00457 J

	MW-34IL	MW-34D
PFNA	1.99	4.30
PFOA	0.356	0.749
PFOS	0.00376 J	0.00848

	MW-103S	MW-103D
PFNA	0.473	0.0302
PFOA	0.0897	0.00906
PFOS	0.0138	0.0081

	MW-113S	MW-113D
PFNA	0.34	0.00584 J
PFOA	0.0774 J	0.00445 J
PFOS	0.0121	0.0029 U

	MW-112S	MW-112D
PFNA	1.46	0.0788
PFOA	0.133	0.014
PFOS	0.0013 U	0.0025 J

	MW-106S	MW-106D
PFNA	0.00883	0.00546 J
PFOA	0.0085	0.0022 U
PFOS	0.0171	0.21

	MW-114S	MW-114D
PFNA	0.162	0.046
PFOA	0.0213	0.00854 J
PFOS	0.00867	0.0033 U

	MW-104S	MW-104D
PFNA	0.614 J	0.717
PFOA	0.063	0.0735
PFOS	0	0.0031 U

	MW-105S	MW-105D
PFNA	0.015	0.00676 J
PFOA	0.00483 J	0.002 U
PFOS	0.0032 U	0.003 U

	MW-108S	MW-108D
PFNA	0.163	0.0021 U
PFOA	0.03	0.0021 UJ
PFOS	0.0031 U	0.0031 U

Monitoring Well
Temporary Well Point
Solvay Property

Note: Results shown in µg/L
J = reported result is an estimate
U = compound was not detected; the value reported is the method detection limit

Basemap Source: Esri World Topo Map

0 800 1,600
Feet

N

Notes:
1. Results from December 2018 sampling event except, MW-34D/IL, MW-109S/D and MW-110S/D. Data presented on this figure for those locations are from September 2018.
2. Results in **bold** exceed NJDEP GWQS.

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Figure 2.
Monitoring Wells with PFNA, PFOA, PFOS Results

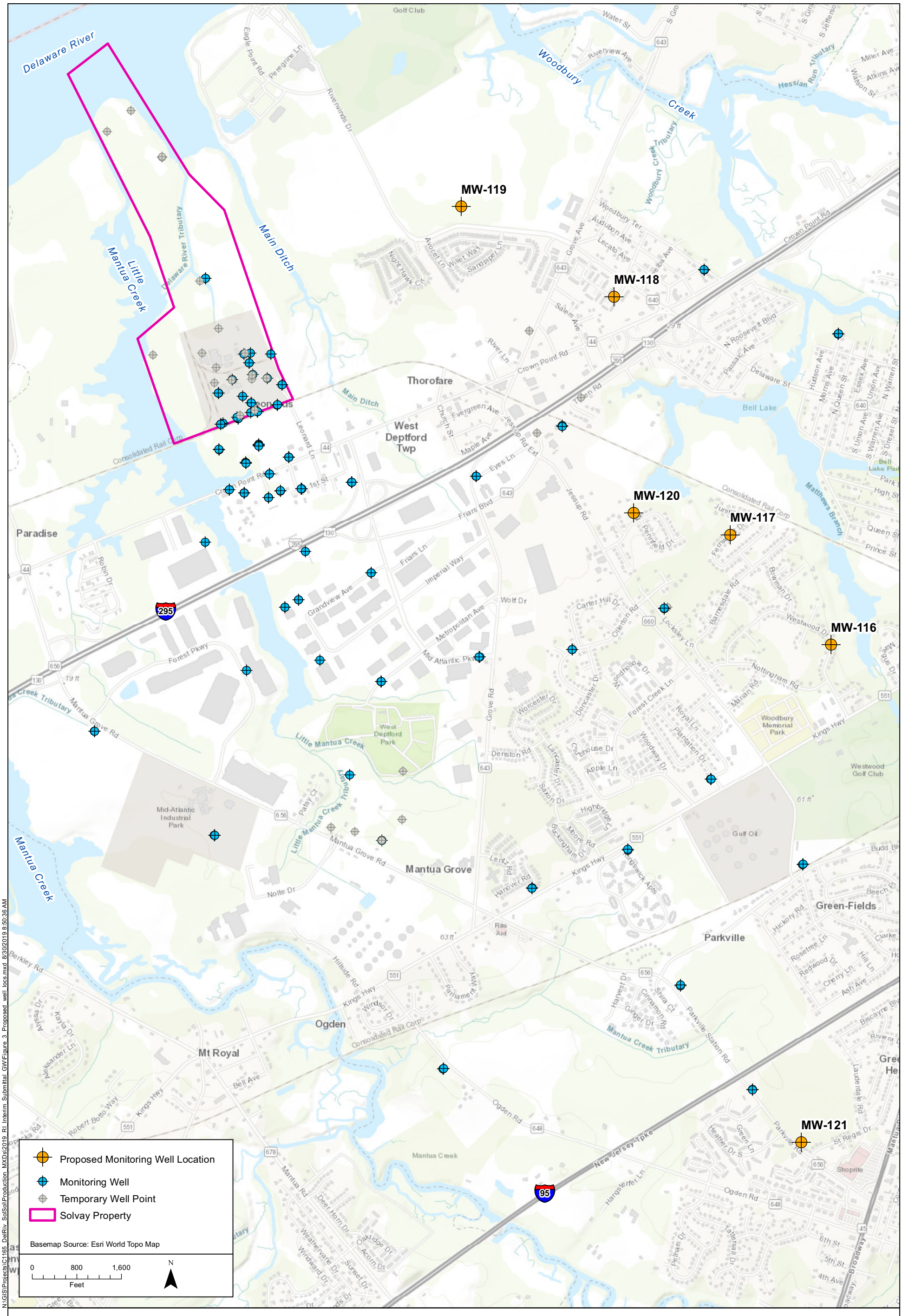

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Figure 3.
Proposed Monitoring Wells